NEW EMMETT HEAD START (PWS 3230075)

SOURCE WATER ASSESSMENT OPERATOR REPORT

RGT 4-9-04

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State of Idaho
Department of Environmental Quality

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Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for the New Emmett Head Start,* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The New Emmett Head Start drinking water system (PWS 3230075) consists of one ground water well source: Well #1.

Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other categories results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, inorganic contaminants (IOCs, e.g. nitrates, arsenic), volatile organic contaminants (VOCs, e.g. petroleum products), synthetic organic contaminants (SOCs, e.g. pesticides), and microbial contaminants (e.g. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

Arsenic was detected in the well water at the concentration of 0.012 milligrams per liter (mg/L) on September 3, 2002, which is over the EPA maximum contaminant level (MCL). The EPA MCL for arsenic is currently 0.010 mg/l. Systems have until 2006 to meet the arsenic standard. Elevated levels of arsenic occur naturally in a large portion of SW Idaho ground water. Section Four of this report outlines options that are available and should be explored by New Emmett Head Start. Nitrate was analyzed for on April 4, 2002, and was not detected in the well water. No other IOCs, SOCs, VOCs, or microbials have been detected in the well water. The delineation crosses an organic priority area for the pesticides atrazine and alachlor.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the New Emmett Head Start, drinking water protection activities should first focus on correcting deficiencies outlined in the 2001 Sanitary Survey, including installing a sample tap, keeping the well

house clean, installing casing 6" above the well house floor, and venting the well. Any spills from the potential contaminant sources listed in Table 1 should be carefully monitored, as should any future development in the delineated areas. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. No chemicals should be stored or applied within the 50-foot radius of the wellhead.

Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations are near urban and residential land use areas. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A water system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Boise Regional Office of the DEQ or the Idaho Rural Water Association.

Because the arsenic in the wells is greater than the level of the revised MCL, the system may need to consider implementing engineering controls to monitor and maintain or reduce the level of this contaminant in the water system. The EPA plans to provide up to $20 million for research and development of more cost-effective technologies to help small systems meet the new MCL (www.epa.gov). EPA (2002) recently released an issue paper entitled *Proven Alternatives for Aboveground Treatment of Arsenic in Groundwater*.

SOURCE WATER ASSESSMENT FOR NEW EMMETT HEAD START, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings, used to develop this assessment, is also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments for sources active prior to 1999 were completed by May of 2003. Source Water Assessments (SWAs) for sources activated post-1999 are being developed on a case-by-case basis. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of this assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The DEQ recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. The DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The New Emmett Head Start well serves approximately 52 people through one connection. The well is located in Gem County, to the north of Payette River (Figure 1). The public drinking water system for the New Emmett Head Start is currently comprised of one well: Well #1.

The main IOC water chemistry issue recorded in the public water system is arsenic. Arsenic was detected in the well water at the concentration of 0.012 mg/L on September 3, 2002. This is over the EPA MCL for arsenic of 0.010 mg/l, but systems have until 2006 to come into compliance. Nitrate was analyzed for on April 4, 2002, and was not detected in the well water. No other IOCs, SOCs, VOCs, or microbials have been detected in the well water. The delineation crosses an organic priority area for the pesticides atrazine and alachlor.

Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ used a refined computer model approved by the EPA in determining the time-of-travel (TOT) zones for water associated with the Payette Valley aquifer in the vicinity the New Emmett Head Start. The computer model used site-specific data, assimilated by DEQ from a variety of sources including local area well logs and hydrogeologic reports summarized below.

The hydrology and water quality of the Lower Payette area have been extensively studied over the last fifteen years. Agencies which have conducted investigations include the University of Idaho (Dieck and Ralston, 1986), United States Geological Survey (Parliman, 1986), Idaho Division of Environmental Quality (IDEQ, 1994, 1996), Idaho Department of Agriculture (IDA, 1998) and the Natural Resources Conservation Service (NRCS, 1991). While these studies have documented areas of water quality problems, a complete understanding of the hydrogeological system of the area is still lacking. The study area was included in the Snake-Payette Hydrologic Unit Assessment conducted by the NRCS (1991). The goal of the NRCS assessment was to accelerate the transfer of technology necessary to protect groundwater and surface water while maintaining farm profitability.

The Payette Valley forms a somewhat crescent-shaped, flat-floored valley bounded by the uplands of Squaw Butte to the north, the foothills to the Boise Front Mountains to the east, the ASouth Slope foothills to the south, and the Snake River to the west. The valley floor slopes gently to the westnorthwest and is drained by the Payette River except for the westernmost portion of the basin, which is also drained by the Snake River. Elevations in the valley range from about 2,380 feet above mean sea level east of Emmett, to about 2,010 feet at the Snake River at the town of Payette. The foothills and uplands are composed of basalt, granite, and both sedimentary rocks and unconsolidated sedimentary deposits. The valley is filled with erosional remnants derived primarily from these rocks and deposits. The alluvial fill of the Payette Valley can be divided into two major units: the younger fluvial deposits, and the older lacustrine deposits. The younger fluvial deposits consist of clay, silt, sand, and gravel. The older lacustrine deposits represent the majority of the basin-fill material and consist of interfingering beds and lenses of clay, silt, and sand.

There are two major aquifers in the valley that are found in the alluvial fill: a shallow water table aquifer and a deeper blue clay aquifer. Each aquifer possesses differing physical and chemical characteristics. The shallow Payette Valley water table aquifer is contained within the fluvial deposits. In the Fruitland area, these deposits are clay- and silt-dominated. Lithologic drill logs in the area show an average of 70 percent clay/silt, 17 percent gravel, and 13 percent sand. Cross-sections constructed from lithologic drill logs suggest that the depositional environment consists of stacked channel deposits of moderate sinuosity, with abrupt lateral variations. Water wells typically yield less than 500 gallons per minute (GPM) from the gravel and sand deposits. Recharge is primarily from infiltration of diverted irrigation water and leakage from the Payette River and its tributaries. The deeper Payette Valley blue clay aquifer is contained within lacustrine deposits. Lithologic drill logs in the area show an average of 75 to 96 percent blue clay, with the remainder being intervals of sand that vary in thickness from inches to feet. Analysis of lithologic drill logs in the area suggest that the sand intervals are lens-shaped, with moderate to poor lateral and vertical interconnectedness. This interconnectedness decreases with depth. Yields typically average less than 50 GPM from the sand lenses. The primary source of recharge to this aquifer is assumed to be historic runoff from the surrounding mountains. Only a small potential for recharge can be attributed to leakage from the Payette River and its tributaries, and infiltration of diverted irrigation water. Groundwater from the blue clay aquifer may have a long residence time.

The delineated source water assessment areas for the New Emmett Head Start well can best be described as a corridor, approximately .7 mile wide and 1.5 miles long, extending to the north from the Payette River (Figure 2). The Payette River was used as a constant head boundary to the south of the well. The canals in the area were used as recharge areas during the summer months. The actual data used by DEQ in determining the source water assessment delineation areas are available upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and the New Emmett Head Start and from available databases.

Land use within the immediate area of the wellhead consists of urban and agricultural uses. The dominant land use outside the immediate area is irrigated agriculture. Businesses within the area include service stations, concrete contractors, and home manufactures. Highway 52, roadways, and irrigation canals also run through the area.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both, to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted during January of 2004. The first phase involved identifying and documenting potential contaminant sources within the New Emmett Head Start Assessment Area through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. The second or enhanced phase of the contaminant inventory involved contacting the operator to validate the sources identified in phase one and to add any additional potential sources in the area.

The DEQ computer database search revealed service stations, concrete contractors, and home manufacturing as potential contaminant sources within the New Emmett Head Start Well #1 delineation. Each of these potential sources could add IOCs, VOCs, or SOCs to the groundwater system. There is a septic system near the New Emmett Head Start well, which is a potential source of IOCs and microbial contaminants. In addition, Highway 52, roadways, and irrigation canals are major sources that cross the delineation (Figure 2). If an accidental spill occurred in any of these sources, IOCs, VOCs, SOCs, or microbial contaminants could be added to the aquifer system (Table 1).

Table 1. New Emmett Head Start, Well #1, Potential Contaminant Inventory

Map ID #	Source Description	TOT Zone[1] (years)	Source of Information	Potential Contaminants[2]
	Sewer tank/drainfield/lines	0-3	GWUDI	IOC, Microbes
1	Service Station	0-3	Database Search	IOC, VOC, SOC, Microbes
2	AST	0-3	Database Search	VOC, SOC
3	Concrete Contractors	3-6	Database Search	IOC, VOC, SOC
4	Home Manufacturing	3-6	Database Search	IOC, VOC, SOC
	Irrigation Canals	0-10	GIS Map	IOC, VOC, SOC, Microbes
	Roads	0-10	GIS Map	IOC, VOC, SOC, Microbes
	Highway 52	0-10	GIS Map	IOC, VOC, SOC, Microbes

[1] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[2] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix A contains the susceptibility analysis worksheets. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination. A lower hydrologic sensitivity score implies a system is less vulnerable to contamination.

The hydrologic sensitivity was rated high for the well (Table 2). The soils are predominantly moderately to well drained, which increases the hydrologic sensitivity score. The well log for the New Emmett Head Start is not available, so a conservative approach was used and the highest score for each factor was assumed. The hydrologic sensitivity ranking may change if information from the well log becomes available. The vadose zone is unknown, and it is assumed that the depth of ground water is less than 300 feet and that there is no fine-grained zone above the producing zone of the well.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability

unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in Sanitary Surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

The New Emmett Head Start drinking water system consists of one well that extracts ground water for community uses. The well was rated as high susceptibility for system construction (Table 2). The 2001 Sanitary Survey found that the system operator needs to install a sample tap, keep the well house clean, install casing 6" above the well house floor, and vent the well. The well log is not available, and it is assumed that the casing and annular seal do not extend into a low permeability unit and that the highest production interval of the well is less than 100-feet below the static water level. All of these conditions increased the system construction score. The well construction score could change when information from the well log is made available.

The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Table 1 of the *Recommended Standards for Water Works* (1997) states that 8-inch steel casing requires a thickness of 0.322 inches, and 6-inch stell casing requires a thickness of 0.280 inches. The standards state that screen will be installed and have openings based on sieve analysis of the formation. Standard 3.2.4.1 requires all PWSs to have yield and drawdown tests that last "24 hours or until stabilized drawdown has continued for six hours at 1.5 times" (Recommended Standards for Water Works, 1997) the design pumping rate.

Potential Contaminant Source and Land Use

The New Emmett Head Start Well #1 rated high for IOCs (e.g. arsenic, nitrate), VOCs (e.g. petroleum products), SOCs (e.g. pesticides), and microbial contaminants (e.g. bacteria). Irrigated agricultural land, Highway 52, septic systems, and commercial potential sources contributed to the contaminant inventory rating. In addition, the delineations fall within a pesticide (SOC) priority area for atrazine and alachlor.

Final Susceptibility Rating

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well, despite the land use of the area, because a pathway for contamination already exists. This is the case for the IOC susceptibility rating due to the arsenic concentration of 0.012 mg/L, which is over the EPA MCL. In addition, having sources within 50 feet of the wellhead gives an automatic high score for the type of contaminant in question. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time-of-travel zone (Zone 1B) and a large percentage of irrigated agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, the well rated high for IOC, VOC, SOC and microbials (Table 2).

Table 2. Summary of the New Emmett Head Start Susceptibility Evaluation

	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
Source		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	H	H	H	H	H	H	H(*)	H	H	H

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
[2]H(*) = Well rated high and automatically high due to detection of IOC over MCL

Susceptibility Summary

In terms of total susceptibility, the well rated high for all categories. Highway 52, septic systems, and commercial potential sources contributed to the susceptibility rating. In addition, the dominant land use of irrigated agriculture and the location of the delineation in a pesticide priority area also contributed to the ratings. High hydrologic sensitivity and well construction scores also contributed heavily to the overall scores. If well construction information could be provided, the final susceptibility scores may be lowered.

There has been one detection of arsenic at the concentration of 0.012 mg/L, which is over the EPA maximum contaminant level. The EPA MCL for arsenic is currently 0.010 mg/l, but systems have until 2006 to come into compliance. There have been no other IOC constituents detected in the well water. There have been no detections of SOC, VOC, or microbial contaminants. The delineation crosses an organic priority area for the pesticides atrazine and alachlor.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local source water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the New Emmett Head Start, drinking water protection activities should first focus on correcting deficiencies outlined in the 2001 Sanitary Survey, including installing a sample tap, keeping the well house clean, installing casing six-inches above the well house floor, and venting the well. Any spills from the potential contaminant sources listed in Table 1 should be carefully monitored, as should any future development in the delineated areas. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented.

Due to the fact that the arsenic detected in the well water was greater than the level of the revised MCL, the system may need to consider implementing engineering controls to monitor and maintain or reduce the level of this contaminant in the water system. The EPA plans to provide up to $20 million

for research and development of more cost-effective technologies to help small systems meet the new MCL (www.epa.gov). EPA (2002) recently released an issue paper entitled *Proven Alternatives for Aboveground Treatment of Arsenic in Groundwater*, which can be found at http://www.epa.gov/tio/tsp/download/arsenic_issue_paper.pdf.

Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations are near urban and residential land use areas. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. There are transportation corridors near the delineations; therefore the Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A water system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices).

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments. For assistance in developing protection strategies please contact Pamela Smolczynski in the Idaho Department of Environmental Quality Boise Regional Office at (208) 373-0461.

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper, Idaho Rural Water Association, at 208-343-7001 (mlharper@idahoruralwater.com) for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

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Appendix A

New Emmett Head Start Susceptibility Analysis Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Public Water System Name: New Emmett Head Start
Public Water System Number: 3230075
Well Number: 1
Date: 4/7/2004
Person Conducting Assessment: Jessica Fox

Version 2.1
5/19/1999

Hydrologic Sensitivity Worksheet

		Value	Comments
(1) Do the soils belong to drainage classes in the poorly drained through moderately well drained categories?	○ Yes ◉ No	2	
(2) Is the vadose zone composed predominantly of gravel, fractured rock; or is unknown?	◉ Yes ○ No	1	Missing well log
(3) Is the depth to first groundwater greater than 300 feet?	○ Yes ◉ No	1	Missing well log
(4) Is an aquitard present with silt/clay or sedimentary interbeds within basalt with greater than 50 feet cumulative thickness?	○ Yes ◉ No	2	Missing well log

Hydrologic Sensitivity Score = 6

Final Hydrologic Sensitivity Ranking = High Hydrologic Sensitivity Score (5 to 6 points)

Public Water System Name: New Emmett Head Start
Public Water System Number: 3230075
Well Number: 1
Date: 4/7/2004
Person Conducting Assessment: Jessica Fox

Version 2.1
5/19/1999

Source Construction Worksheet

				Comments
(1)	Well Drill Date	Input Date		
(2)	Well Drillers Log Available?	○ Yes ◉ No		If no well log is available answers to (4) and (6) are assumed to be NO and points are added to score.
(3)	Sanitary Survey Available? If Yes, for what year?	◉ Yes ○ No	Year 2001	If no sanitary survey is available answer to Questions (5) and (8) is assumed to be NO and points are added to score.
			Value	
(4)	Are current IDWR well construction standards being met?	○ Yes ◉ No	1	Missing well log
(5)	Is the wellhead and surface seal maintained in good condition?	◉ Yes ○ No	0	
(6)	Do the casing and annular seal extend to a low permeability unit?	○ Yes ◉ No	2	Missing well log
(7)	Is the highest production interval of the well at least 100 feet below the static water level?	○ Yes ◉ No	1	Missing well log
(8)	Is the well located outside the 100 year floodplain and is it protected from surface runoff?	○ Yes ◉ No	1	According to the 2001 Sanitary Survey, the casing is less than the required 6" above the ground to prevent surface water contamination in to the well.

Source Construction Score = 5

Final Source Construction Ranking = High Source Construction Score (5 to 6 points)

	Public Water System Name:	New Emmett Head Start				Version 2.1			
	Public Water System Number:	3230075				5/19/1999			
	Well Number:	1							
	Date:	4/7/2004							
	Person Conducting Assessment:	Jessica Fox							
	Potential Contaminant Source/Land Use Worksheet								
	Land Use/Zone IA					**IOC Score**	**VOC Score**	**SOC Score**	**Microbial Score**
(1)	Land Use (Pick the Predominant Land Type)	Irrigated Cropland				2	2	2	2
(2)	Is Farm Chemical Use High or Unknown? (Answer No if (1) = Urban/Commercial)	○ Yes	◉ No			**Stop: Go Directly to Step 3**			
2a	Indicate approriate chemical category	☐ IOCs ☐ VOCs ☐ SOCs				0	0	0	0
(3)	Are IOC, VOC, SOC, Microbial or Radionuclide contaminant sources Present in Zone IA? OR Have SOC/VOC contaminants been detected in the well? OR have IOC contaminants been detected above MCL levels in the well? If Yes, please check the appropriate chemical	◉ Yes	○ No						
		☑ IOCs ☐ VOCs ☐ SOCs ☐ Microbials							
					Land Use Subtotal	**2**	**2**	**2**	**2**

Potential Contaminant Source/Land Use Worksheet continued

Zone IB

						IOC Score	VOC Score	SOC Score	Microbial Score
(4)	Contaminant Sources Present in Zone IB?	◉ Yes	○ No						
	Number of Sources in Zone IB in Each Category?		**# IOC Sources**	**5**		8	8	8	8
	(List sources by Category up to a Maximum of Four per Category)		**# VOC Sources**	**5**					
			# SOC Sources	**5**					
			# Microbial Sources	**4**					
(5)	Are there Sources of Class II or III Leachable Contaminants in Zone IB?	◉ Yes	○ No			IOC Score	VOC Score	SOC Score	Microbial Score
	(List Sources up to a Maximum of Four per Category)		**# IOC Sources**	**8**		4	4	4	0
			# VOC Sources	**4**					
			# SOC Sources	**4**					
(6)	Does a Group 1 Priority Area Intercept or Group 1 Priority Site Fall Within Zone IB?	◉ Yes ☐ IOCs ☐ VOCs ☑ SOCs ☐ Microbials	○ No			0	0	2	0
(7)	Pick the Best Description of the Amount and Type of Agricultural Land in Zone IB.	Greater Than 50 % Irrigated Agricultural Land				4	4	4	4
			Zone IB Subtotal			**16**	**16**	**18**	**12**
(8)	Is this a Transient Public Water System?	○ Yes	◉ No		**Continue to (9)**				

	Potential Contaminant Source/Land Use Worksheet continued							
	Zone II				**IOC Score**	**VOC Score**	**SOC Score**	**Microbial Score**
(9)	Are Contaminant Sources Present in Zone II?	◉ Yes	○ No	**Complete Step 9a**				
9a	What types of chemicals?	☑ IOCs ☑ VOCs ☑ SOCs			2	2	2	0
(10)	Are there Sources of Class II or III Leachable Contaminants in Zone II?	◉ Yes	○ No	**Complete Step 10a**				
10a	What type of contaminant?	☑ IOCs ☑ VOCs ☑ SOCs			1	1	1	0
(11)	Pick the Best Description of the Amount and Type of Agricultural Land in Zone II.	Greater Than 50 % Irrigated Agricultural Land			2	2	2	0
			Zone II Subtotal		**5**	**5**	**5**	**0**

Potential Contaminant Source/Land Use Worksheet continued

	Zone III				IOC Score	VOC Score	SOC Score	Microbial Score
(12)	Contaminant Sources Present in Zone III?	◉ Yes	○ No	**Complete Step 12a**				
12a	What types of contaminant?	☑ IOCs ☑ VOCs ☑ SOCs			1	1	1	0
(13)	Are there Sources of Class II or III Leachable Contaminants in Zone III?	◉ Yes	○ No	**Complete Step 13a**				
13a	What types of contaminants?	☑ IOCs ☑ VOCs ☑ SOCs			1	1	1	0
(14)	Is there Irrigated Agricultural Land That Occupies > 50% of Zone III?	◉ Yes	○ No		1	1	1	0
			Zone III Subtotal		**3**	**3**	**3**	**0**

	IOC Score	VOC Score	SOC Score	Microbial Score
Community and Non-Community, Non-Transient System Contaminant Source/Land Use Score	**26**	**26**	**28**	**14**

Final Community/NC-NT System Ranking	IOC Score = High Contaminant/Land Use Score (21 to 30 points)
	VOC Score = High Contaminant/Land Use Score (21 to 30 points)
	SOC Score = High Contaminant/Land Use Score (21 to 30 points)
	Microbial Score = High contaminant/Land Use Score (12 to 22 points)

Public Water System Name: New Emmett Head Start
Public Water System Number: 3230075
Well Number: 1
Date: 4/7/2004
Person Conducting Assessment: Jessica Fox

Version 2.1
5/19/1999

SWA Susceptibility Rating Sheet

		Rationale for High Susceptability in Zone IA
Zone IA Susceptability Rating **Warning**: Due to specific conditions found in Zone IA this well has been assigned a High overall susceptability for: *This rating is based on: (1)The presence of contaminant sources in Zone IA or (2)The detection of specific SOC/VOC chemicals in the well or (3)The detection of specific IOC chemicals above MCL levels in the well.* *Public Water Systems may petition IDEQ to revise susceptibility rating based on elimination of contaminant sources or other site-specific factors.*	IOC Contaminants	There was a detection of arsenic (IOC) over the EPA MCL.

Community and Noncommunity-Nontransient Sources	IOC Score	SOC Score	VOC Score	Comments
Hydrologic Sensitivity Score =	6	6	6	
Potential Contaminant Source/Land Use Score X 0.20 =	5	6	5	
Source Construction Score =	5	5	5	
Total	**16**	**17**	**16**	

FINAL WELL RANKING
IOC Ranking is High (13 to 18 points)
SOC Ranking is High (13 to 18 points)
VOC Ranking is High (13 to 18 points)

Microbial Susceptability Rating	Score	Comments
Hydrologic Sensitivity Score =	6	
Potential Contaminant Source/Land Use Score X 0.375 =	5	
Source Construction Score =	5	
Total	**16**	

FINAL WELL RANKING
Microbial Ranking is High (13 to 18 points)